

# **ISSUE 11: TRANSPORTATION SYSTEM IMPLEMENTABILITY**

## **Changes from the Draft to the Final EIS**

The changes made in this chapter to reflect Alternative 7-M are fairly minor. Implementation costs have been updated to reflect changes proposed to the transportation system. The schedule for implementation didn't change.

## **Introduction**

This section addresses the potential effects of the Travel Plan decision on the transportation system of roads and trails. It addresses the schedule, costs and physical changes necessary to implement the Travel Plan.

## **Affected Environment**

The goal of the transportation system is to respond to the needs and demands of the users by providing an efficient and economical system of roads and trails, while minimizing the effects to the local environment.

The transportation system that currently serves the users on the Gallatin National Forest consists of over 2,100 miles of road and 2,800 miles of summer and winter trails. The transportation system provides recreation opportunities within the National Forest, provides access for forest management and protection, and provides access to private land inholdings.

Of the 2,100 miles of road, approximately 1,000 miles are open to some form of public use, be it in passenger cars, high-clearance vehicles or OHVs on roads otherwise closed to highway-type vehicles. All of the 2,800 miles of trail are open to public uses.

Following is a discussion of the types and standards of roads and trails that currently make up the Forest's transportation system.

## **General Roads Discussion**

Roads are transportation routes that are over 50 inches wide and are made available for all classes and sizes of street-legal vehicles. In some cases, non-street-legal vehicles can be allowed under special conditions, termed dual-designation, but must be authorized by Forest Order. In this Travel Plan, dual-designation occurs when emphasized uses overlap on a particular road. For example, emphasizing all ATVs, including the non-street legal ones, on a backcountry road or snowmobiles on a plowed road.

### Road classes

The Forest Service uses the following three road classes to describe the functional capacity of a road.

- 1) *Arterials* are the main trunk roads and are logically the highest standard roads. Most have been constructed to handle larger types and volumes of traffic for longer seasonal periods. Most have alignments that were designed for traffic speeds between 15 and 35 mph. These enter major drainages. These primary routes service Forest and private lands and are managed to maximize use periods.
- 2) *Collectors* are intermediate standard branch roads that collect the local roads within several smaller drainages.
- 3) *Locals* are lower standard roads that service end of road needs, like trailheads, campgrounds, general Forest access, etc.

**Error! Not a valid link.** reflects only those roads that are open to public road uses. Project roads (see discussion below) are not open to public road uses, make up over 50% of the Forest's road system, are dominantly local roads and are not reflected in this table.

**Table 3.11. 1 Current distribution of open roads by road class.**

Road Class	Percent of Passenger Car Roads	Percent of Backcountry Roads
Arterial	16	3
Collector	51	30
Local	33	67

### Season of use

Roads on the Forest are physically available for use typically beginning late spring after the road dries out through the first part of December when use decreases and the roads snow-in. Snowed-in roads (not plowed) are not considered maintained, so highway vehicle traffic is normally discouraged. A variety of closure dates occur that protect or enhance wildlife and other resource values. The dates and reasons are displayed on the most current Forest visitor map. No roads are currently plowed by the Forest specifically for public use. Timber sales, mining activities, state or county road jurisdictions and private landowners have been allowed to plow roads for their purposes. These roads sometimes become available for public use when no other seasonal restrictions are in effect.

### Seasonal limitations

Few, if any, of the Forest roads are specifically designed for heavy truck traffic during spring breakup. Spring breakup generally occurs in this area between March 30 and June 30, depending on a variety of factors like snow cover, elevation, aspect, soil types, etc.

Spring breakup occurs on roads that have been either under snow for an extended period and/or were subjected to winter freezing. Moisture tends to migrate into the road subgrade and freeze. As a road 'thaws', this migrated moisture saturates the subgrade and significantly reduces its load carrying capacity, making it vulnerable to damaging rutting. Saturated subgrades will not support aggregate or asphalt surfacing under loads and have a high probability of damaging or destroying the surfacing.

Passenger cars and light trucks, even though considerably lighter than heavy trucks, can still rut and damage road surfaces during breakup. Many of the roads where this is an issue are currently gated during this vulnerable time. Some are not. These are typically roads that provide private residential access that demand year-round access. These under-constructed roads have been very difficult to manage under these conditions.

## **Passenger Car Roads**

Passenger car roads provide the backbone of the transportation system. They commonly provide access to campgrounds, trailheads, private lands, forest interiors and major attractions like lakes and rivers. They are usually open to the public for at all or at least a portion of the year and are most likely to receive routine surface maintenance for user comfort and drivability. They are the multipurpose roads that serve a variety of vehicle types, volumes, speeds and uses. Road standards can range from double-lane paved to single-lane native surface roads. The Forest currently operates about 320 miles of passenger car roads. Potential Public Forest Service Roads (PFSRs) are included in the road category. This decision may nominate the potential PFSRs for inclusion into an improvement funding program. Following improvements to a satisfactory standard, another public road agency, like a county, could accept jurisdiction and maintenance responsibilities. If another agency were unwilling to accept jurisdiction, the Forest Service would retain the road. PFSRs would typically be the highest standard passenger roads, providing unrestricted access to private lands and major forest destinations.

Passenger car roads are generally characterized as follows:

### **Lanes**

Forest roads have either one or two lanes. Single-lane passenger car roads vary in width between 10 and 18 feet, the majority falling between 12 and 16 feet, depending on the significance of the road. Turnouts are provided and spaced strategically to allow oncoming traffic to pass. Users are expected to slow and negotiate the passing while backing may be necessary on occasion. Single-lane roads are appropriate for low volumes and low speeds. Double-lane roads vary in width between 20 and 24 feet. Double-lane roads, like Hyalite and Hebgen Lake, are necessary to accommodate higher traffic volumes and speeds where passing oncoming traffic is frequent.

**Table 3.11. 2 Current distribution of traffic lanes on passenger car roads.**

Lanes	Miles	Percent of Passenger Car Roads
Single	291	91
Double	29	9

### **Surface**

Forest passenger car roads currently provide a mix of road surfaces, from asphalt to native local soils. Paved roads are intended for roads with higher traffic volumes and speeds where safety and serviceability become an issue. Aggregate provides for a durable manufactured surface, which allows extended use periods on the road. Native surfaces can be unstable during extended wet

weather and tend to be vulnerable to rutting and surface erosion during these times. The following table shows the mix of surface types on the passenger car roads.

**Table 3.11. 3 Current distribution of surface types on passenger car roads.**

Surface Type	Miles	Percent of Passenger Car Roads
Asphalt	32	10
Aggregate	118	37
Native	170	53

## **Backcountry Roads**

Backcountry roads, also known as high clearance roads, are typically not suitable for low-clearance passenger style vehicles. These are typically low-standard, low-volume roads that demand slow speeds. The surfaces are commonly rougher, the widths are narrower, the turnouts infrequent, the curves tighter and the grades steeper than passenger car roads. On the Forest, the majority of the 417 miles of backcountry roads open to the public can be characterized as single-lane, 10-12 feet wide, rough native surface, partially brushed-in and seasonally restricted. Maintenance of the road is largely for resource and facility protection and not user comfort.

## **Administrative Roads**

Administrative roads are managed primarily for administrative access to and within the National Forest. Many are open and available for other public non-road uses, such as ATVs, bicycles, stock, walking, etc. Road standards for administrative roads typically mirror minor passenger car and backcountry roads, depending the access required. Use of the road by the public is controlled with gates, signs or other restriction devices. These roads are maintained to minimize sediment production and facility preservation. Private landowner and permitted uses may exist on administrative roads.

## **User Roads**

User roads have been created by the public adjacent to open roads to access firewood cutting, game-retrieval, camping, lakeshores, fishing, etc. Also called go-downs, two-tracks, unclassified routes or roads, these routes typically develop where the terrain is gentle and the vegetation is open. On some occasions, users have put substantial efforts into creating these routes to access their desired spot. Rarely have these had the benefit of design or construction oversight. Most are two-tracks, 8 feet wide, but can vary. Over the years, many of these user roads have been closed when resource damage is considered excessive, like within riparian areas. Many are relatively short, less than 1/8-mile long, and currently open. These form an important transportation element for dispersed recreational use by providing visual and dust screening from main routes, closer proximity to attractions and dispersing users.

The Forest does not have a complete mapped inventory, but general monitoring estimates that there are around 160 miles of user routes in existence throughout the Forest. That roughly equates to 1 mile of user road for every 5 miles of open public road.

## Project Roads

Project roads include all roads that are managed for intermittent use. They are normally closed to use and in a vegetated state. These roads might be put into service during a timber sale and later taken out of service and put into “cold storage” following timber sale activities. The roads are kept in storage until subsequent needs arise. Project roads may be open to other public non-road uses, such as ATVs, bicycles, stock, walking, etc. Most are physically closed with earthen berms or vegetation when adjacent to open roads.

## General Trails Discussion

Trails are transportation routes made available specifically for vehicles and users under 50 inches in width. Trails may have one or two lanes, depending on the volumes and types of use. Refer to the tables in Chapter 2 for miles of trail opportunity for each type of use. Trails on the Forest can be further characterized in the following ways:

### Trail class

The Forest Service uses five trail classes to describe the developmental class of a trail. The following table shows the broad descriptions of trail classes. Generally, the lower the trail class, the more challenging the recreational opportunity for the user. Stock use, for instance, can be appropriate on any of the trail classes, but Class 1 or 2 trails may be unsuitable for all but the most experienced riders and horses.

**Table 3.11. 4 Current distribution of trails by trail class.**

Trail Class	Percent of Summer Trails	Percent of Winter Trails
Class 5	<1	N/A
Class 4	35	69
Class 3	45	11
Class 2	17	20
Class 1	3	N/A

- 1) *Class 5* trails are fully developed and typically paved and accessible with needed structures like bridges, handrails, curbs, etc. Trail locations are selected to maximize user convenience and comfort. These are typically non-motorized pedestrian hiker trails where bicycles may or may not be permitted. Centerline gradients would be controlled to meet user limitations. Non-applicable for winter trails.
- 2) *Class 4* trails are high standard trails that are capable of providing a high level of service to single or multi-purpose uses. These are normally the main trunk-line trails that lead from the road and trailhead into a major drainage. Trail locations are selected for maximizing route stability for high use and would likely require continuous cuts and fills. Trail treads are designed and maintained to resist high volumes of use. The challenge is appropriate for even the novice user. Structures are freely used to stabilize the tread, protect adjacent resources, maximize user safety and enhance user comfort. Surfaces are highly maintained to minimize large rocks and roots and may be surfaced. Centerline gradients are gentle with some steeper pitches. Winter trails are frequently groomed.

- 3) *Class 3* trails are intermediate standard trails. Some user convenience is traded for higher challenge. Trail locations are selected as a compromise between user challenge and trail durability, and are likely to have sections of continuous cuts and fills. Trail treads are capable of resisting medium to high volumes of use. The challenge is more appropriate to a more skilled user. Structures are used sparingly to eliminate specific user hazards or to protect adjacent resources and normally not for user convenience or comfort. Surfaces are likely to be irregular, with sections of continuous rocks and roots. Centerline gradients are steeper and may be continuous over long distances. Winter trails are marked with occasionally grooming.
- 4) *Class 2* trails are low standard trails with few structures. The challenge is for the most skilled user and may be inappropriate for the novice users. Location is controlled by the geography keeping cuts and fills to a minimum. Generally capable of supporting only low volumes of use. Higher volumes of use will likely result in rapid trail distress. Structures are infrequent and are used for only significant safety risks or resource protection. Centerline gradients are steep and are likely be continuous over long distances. Winter trails are marked and not groomed.
- 5) *Class 1* trails are the lowest standard trail and are characterized as a non-constructed way trail. Portions may have little to no tread, going through rock or talus, for instance. Location is entirely geography dependant and trails typically follow ridges and draws. Navigational skills will likely be required between markings. The challenge is typically e high. Use is likely to be low, higher volumes of use without a set tread would likely cause unwanted widening and vegetation trampling. Non-applicable for winter trails.

### **Season of use**

Summer trails on the Forest are physically available for use typically beginning late spring after the snow melts until late fall, when the snowfalls become heavy. Winter trails typically last from early December to late March, depending on the specific elevation and aspect.

### **Seasonal limitations**

Virtually all summer trails are native surfaces and many are vulnerable to accelerated erosion during spring runoff and springtime soil saturation. Add horses, ATVs, motorcycles, mountain bikes or (to a lesser degree) hikers onto these sensitive treads and the resulting erosion can be greatly magnified. In many cases, the adjacent vegetation is trampled as users attempt to find firmer ground. Trail braiding commonly occurs in these situations, especially in open areas like meadows. The Forest currently uses seasonal restrictions to control most motorized uses during the vulnerable spring period, but has few non-motorized restrictions to protect trails from similar damage.

### **Motorized Summer Trails**

Motorized summer trails include all routes used by vehicles under 50 inches wide, such as ATVs and motorcycles. Four-wheel driveways used in this Travel Plan are considered backcountry roads and discussed in a previous paragraph. Motorized summer trail routes may be physically located on trails, closed roads, administrative roads and, in some cases, open roads. Refer to the tables in Chapter 2 for miles of trail on each of these routes.

Few of the ATV routes being used on the Forest today have actually been constructed as ATV routes. Most have been converted from narrower 18-30 inch routes that were constructed primarily

for stock and hiking uses. On gentle ground this conversion has had little resistance, has been quite widespread, and the change has occurred fairly rapidly. On the steeper and more difficult ground, the conversion has been slower and has required skilled riding to accomplish. A much smaller percentage of these routes have actually been converted to the ATV widths. Constructed ATV routes would normally have widths between 48 and 60 inch widths for single-lane and wider for double-lane. Centerline gradients and surface roughness varies considerably, but are primarily responsible for providing the challenge the user faces on the route. Old roads provide the least challenge and accommodate all skill levels. Narrow, steep and rocky routes are typically appropriate for the more skilled user. Since most of the routes today are either on old roads or on converted narrow trails, the challenge levels are typically either low or high with little in the middle.

Many of the system trails on the Forest outside of Wilderness are currently open to motorcycles. Motorcycles, stock and hikers tend to utilize the same standard of trail and have historically shared the same routes. The routes tend to have 18-30 inch widths, variable centerline gradients, and a broad mix of surface conditions.

## **Motorized Winter Trails**

Snowmobile trails on the Forest occur in a variety of sizes and styles with a mix of grooming frequencies. Refer to the tables in Chapter 2 for miles of trail on each of these routes.

Groomed trails widths on the Forest vary from 8 to 16 feet. About half of the groomed routes have orange diamond route markers to help define them, the other half rely on the groomed surface to define the route. Grooming frequencies vary from nightly, as on trails around West Yellowstone, to weekly or even monthly. The majority of groomed routes on the Forest are on summer roads, the balance on summer trails. Groomers require the route to be free of downfall.

Ungroomed snowmobile trails, or marked routes, tend to follow either summer trails or simply wind through the Forest through meadows and cleared routes. All are marked with orange diamond route markers. Openings have to be a minimum of 5 feet wide, enough to squeeze the snowmobile through, but the route relies on snow cover to bridge over much of the downfall.

## **Non-Motorized Summer Trails**

Summer non-motorized trails for hiking, stock or mountain bikes are typically 18-30 inches wide, have variable centerline gradients and have a broad mix of surface conditions. Narrow trails on steep grades with rough surface conditions tend to be the most challenging. Some of the high use urban trails like the “M” and have widths of 48 inches, with relaxed grades and smooth treads. Trails like Grotto Falls that intend to meet pedestrian accessible standards can be 60 inches wide, flat, and surfaced. The overwhelming majority of the summer non-motorized trails fit in the 18-30 inch standard.

## **Non-Motorized Winter Trails**

Winter non-motorized trails for skiing and snowshoeing on the Forest currently fit into two general groups: highly groomed trails with set tracks or marked routes with little to no grooming or track-setting.

High standard routes, like the Rendezvous ski trails next to West Yellowstone, are groomed for both skate and classic cross-country skiing. The routes are wide, groomed nightly and provide for a large volume of use. Maps and signs direct users along the one-way loop systems.

Low standard routes generally follow summer trail routes, are marked with blue diamond route markers, and are either seldom or not groomed at all.

## **Direct and Indirect Effects**

As the Travel Plan is implemented, the transportation system of roads and trails will undergo changes to accommodate the changing use patterns and the anticipated growth (see Issue 16: Recreation). This section will look at:

- 1) The pace at which the changes are likely to be made.
- 2) The costs of making those changes.
- 3) The types of changes predicted to occur to the facilities.

## **Analysis Methodology**

Schedules, costs and effects to the transportation system were developed using historic Gallatin National Forest projects, funding levels and experience.

## **Comparison of Impacts by Alternative**

The transportation system must adapt to the changing pattern and types of uses caused by the Travel Plan decision. The pace at which the adjustments will be made to implement the decision will be largely a function of the availability of funding and time limitations on producing.

For analyzing the implementation of the Travel Plan decision, three implementation phases will be discussed:

- 1) Phase 1 – immediate changes to transportation system.
- 2) Phase 2 – short-term changes to the transportation system.
- 3) Phase 3 – long-term changes to the transportation system.

## **Phase 1 – Immediate Changes to the Transportation System**

This phase includes executing Forest orders that implement permanent and short-term closures, creating user information such as maps and user guides that show opportunities and prohibitions, and installing travel management signing. Short-term closures would prohibit a specific use on a route that would be unsuitable until improved to a standard that would accommodate that use.



Examples of short-term closures would be new routes to be constructed, ATV routes where the trails are too narrow and unsuitable, or routes with a specific mitigation that must be accomplished prior to opening even if the route is currently open.

## Implementation Schedule – Phase 1

Most of the changes in Phase 1 would be implemented within the first year following the decision. The Forest Orders would be drafted in advance and likely be revised, signed and implemented within a few days of the decision. This would immediately prohibit unwanted use.

Production of maps or user guides, or brochures would likely have to be implemented in three stages. Stage 1 would be the production of an inexpensive interim map showing non-motorized prohibitions described by the Forest Orders and motorized opportunities on the Motor Vehicle Use Map (MVUM) and the Over-snow Motor Vehicle Use Map. These would likely be available to the public on some inexpensive media free of charge. Maps of this variety could be available for distribution within a month of the decision since much of the preparation could be accomplished in advance. Stage 2 would follow with maps that are more permanent or user guides printed on durable media for distribution and may be at a cost to the public. These user guides could be available within a few months of the decision. Stage 3 would produce a new Forest visitor map and would likely take a minimum of one year to edit and print. These would be sold to the public as they are at present. Snowmobile maps are currently produced by snowmobile clubs with assistance from Montana Department of Fish, Wildlife and Parks. The editing and printing of these maps would continue to be accomplished by the same process.

New travel posters on roads and trails would likely take only a few months to install following the decision, assuming they are in stock at the time. Posts at key points are either already present or could be installed in advance.

This phase would vary only slightly among alternatives.

**Table 3.11. 5 Implementation schedule for Phase 1 – immediate changes.**

Implementation Action	Implementation Year															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	++
All Alternatives																

## Implementation Cost – Phase 1

The cost of executing Forest Orders would be minimal.

The cost of producing and distributing maps is highly variable. Newsprint maps free distribution could cost as little as \$0.50 per copy to prepare and print. User guides on better quality media would cost from \$2.00 to \$4.00 to prepare and print, depending on the size and information included. The two Forest visitor maps (east and west) cost, on the average, \$12.00 to edit and print per pair.

Purchasing and installing posters throughout the Forest at approximately 500 key transition points along roads, trails, and trailheads would cost an average of \$25.00 per installation. All the posters would be new and many installations would require new mounting posts.

Full cost to implement Phase 1 is estimated to be between \$100,000 and \$200,000 and would be similar between all alternatives. Signing locations, such as trailheads, junctions, etc would be similar for all alternatives and only the message would change depending on users allowed on the trail or road system. Many of the costs, like map edits, are already in the present process stream.

## Predicted changes to Transportation System – Phase 1

Except for signing, no changes to specific roads and trails are planned for this phase.

## Phase 2 – Short-term Changes to the Transportation System

This phase includes sufficiently ‘opening’ the transportation system to accommodate the designated uses. Proposed routes would be constructed. Existing routes would be improved to a standard that would allow for opening the route for the designated uses or to fulfill any stated mitigations. Roads and trailheads would be plowed during the winter season.

## Implementation Schedule – Phase 2

Based on past and anticipated appropriated funding levels, partnerships, grants, volunteer work, etc, Phase 2 could be accomplished as shown in Table 3.11.6. Priorities would have to be set to determine the sequencing of the improvements. Factors in making sequencing decisions would include minimizing user impacts and interruptions, minimizing enforcement needs, preparing and scheduling work, preparing grants and user group participation with volunteer work. The schedules in this table do not include implementation of access objectives that have no specific routes identified. This work would be considered part of Phase 3.

Since snowplowing will be an on-going need and will require community and multi-agency participation, it is most vulnerable to a bumpy implementation. Alternatives that propose plowing portions of the Hyalite road would require added determination to implement.

**Table 3.11. 6 Implementation schedule for Phase 2 – short-term changes.**

Implementation Action	Implementation Year																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	++	
Roads																	
All Alternatives																	
Summer Motorized and Non-Motorized Trails																	
Alternative 1																	
Alternative 2																	
Alternative 3																	
Alternative 4																	
Alternative 5																	
Alternative 6																	

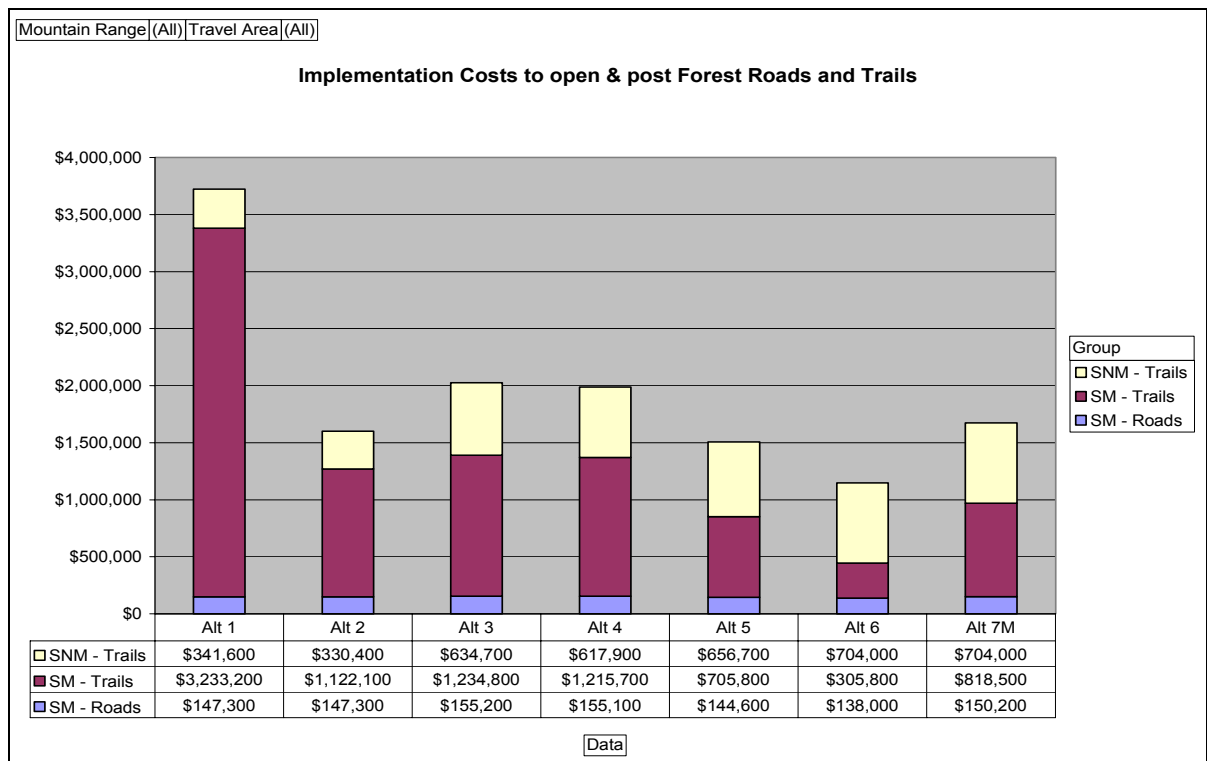
Implementation Action	Implementation Year															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	++
Alternative 7-M																
Winter Trails																
All Alternatives																

Alternative 1 appears disproportionately laborious to implement. Alternative 1 reasons that all routes currently legal to motorized uses (without imposition of the statewide OHV decision) will in fact be converted into ATV routes. Since many of the trails outside the Wilderness are open to motorized uses at the current time, most would have to be rebuilt to accommodate ATVs. Alternatives 2-5 and 7-M would take between 4 to 6 years to rebuild and open routes to designated uses. For a 15 to 20-year Travel Plan, this offers a reasonable timeframe to plan and implement this volume of change. By virtue of removing summer motorized uses from roadless areas, Alternative 6 would be the quickest to implement.

## Implementation Cost – Phase 2

Based on past and anticipated appropriated funding levels, partnerships, grants, volunteer work, etc, the cost to open the transportation system (not including snowplowing) would be as shown in Figure 3.11.1. The costs in this table do not include implementation of access objectives that have no specific routes identified. Opening motorized trails includes some construction of new connector routes, but largely widening existing routes to accommodate ATV traffic. Opening non-motorized routes would primarily involve construction of new connector routes.

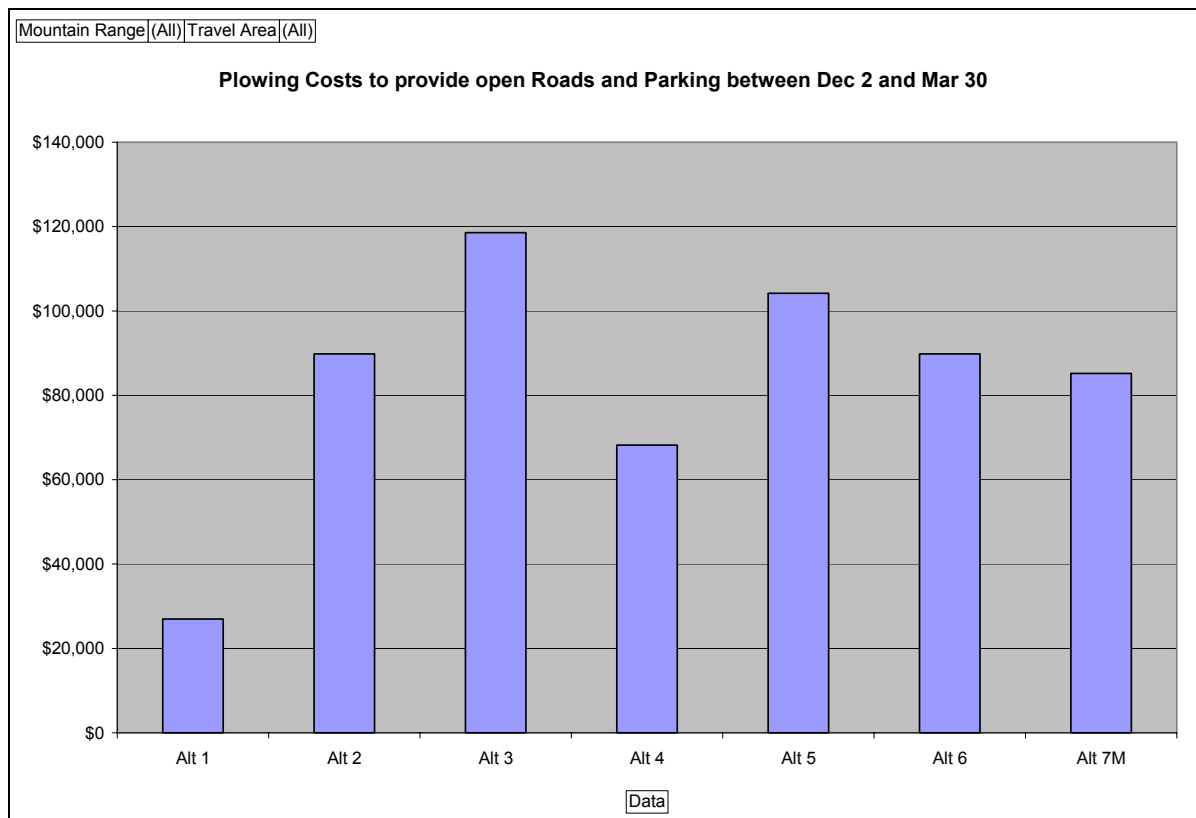
**Figure 3.11. 1 Comparison of costs to implement Phase 2 work.**



Alternative 1, similar to the discussion under schedules above, assumes all current legal motorized routes (without imposition of the statewide OHV decision) are rebuilt to accommodate ATVs. Alternatives 2 through 7-M are well within the ability of the Forest to accomplish within a reasonable amount of time (refer to the Scheduling section above).

The anticipated costs to plow roads needed to implement the winter Travel Plan are shown in Figure 3.11.2. Plowing would include truck plowing with the occasional sanding of curves and ice, but no application of ice-melting salts. Snow berms would occasionally need to “winged” off to allow for additional snow storage. Since the winter recreational season would be planned between December 1 and March 30, plowing would have to be initiated when major snowfalls begin, customarily by November 1. These costs assume that, on the average, there are 20 plowable snowfall events between November 1 and March 30, even though this can be highly variable. The decision to plow would have to be made early in the year, so plowing can be arranged and can commence prior to creation of unplowed three-tracks and ice buildup. Roads in this iced-up condition are very difficult to plow back into shape. This would take single-minded community and multi-agency cooperation. The goal would be to set up a reliable system of funding and implementation that can endure over the years.

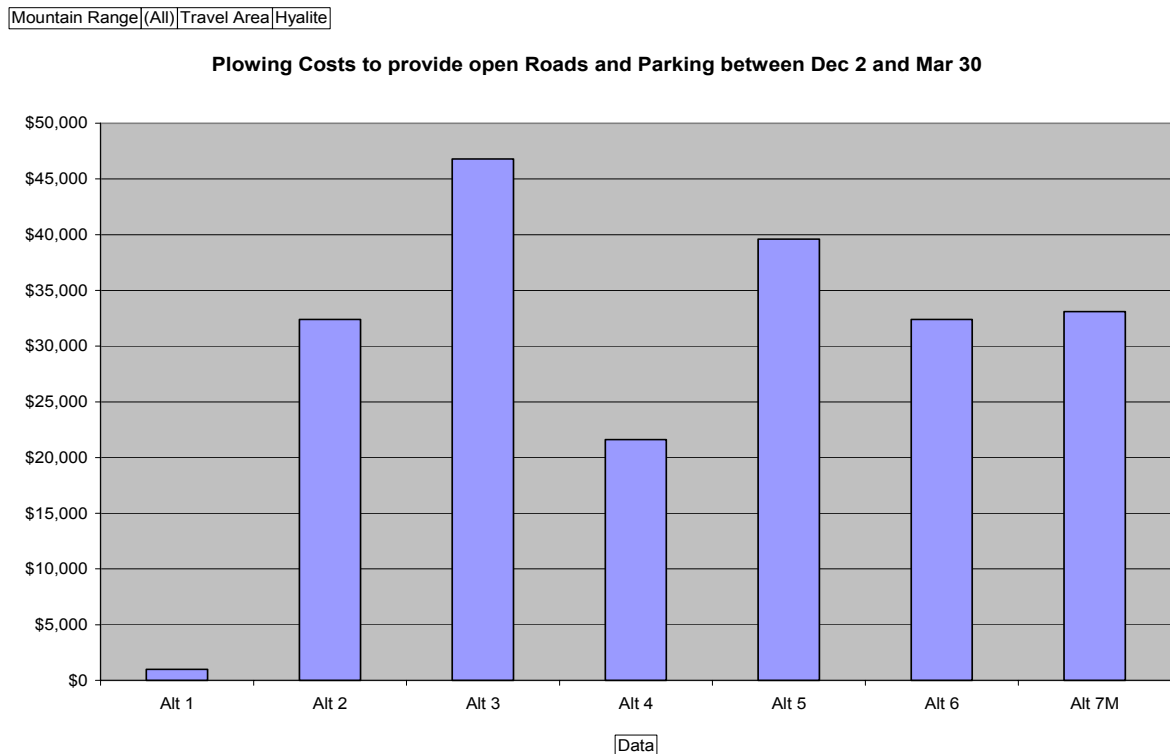
**Figure 3.11. 2 Anticipated costs to plow all roads and parking areas.**



Almost half of the costs associated with snow plowing in Alternatives 2 through 7-M come from plowing the Hyalite road. Figure 3.11.3 shows the cost of plowing the 6 to 13 miles of the Hyalite

road, depending on the alternative. The balance of the costs would be to plow routes where the Forest has a winter recreational use objective such as short segments of Forest roads not currently being plowed, sharing in the costs of Forest roads currently being plowed by the state, county, or private landowners and the costs of plowing parking facilities.

**Figure 3.11. 3 Anticipated costs to plow Hyalite road.**



Alternatives 3 and 5 contemplate plowing over the Middle Creek Dam and beyond. Since the Hyalite road over Middle Creek Dam is lined with concrete Jersey barriers, it is at high risk of drifting full with snow in a strong storm event. These costs do not take into account these events, but could either close the road permanently or cost several thousand dollars to open. Following a “drift-in”, front-end loaders would be necessary to plow the road across the dam since tracked vehicles, like dozers, would not be allowed. Alternative 7-M stops plowing at the Blackmore Day Use area and avoids plowing across the dam. Hyalite road to the spillway bridge on the far side of the dam is double-lane paved road with delineators and would have adequate width for plowing and storage of snow. Beyond the dam, the road is a wide single-lane road without delineators and would have problems with driving widths and snow storage. Frequent turnouts would have to be plowed for passing. Edges would have to be marked with delineators to facilitate plowing and parking. Users would have to be advised of the narrowing conditions. The exposed section of road across the dam and above Hood Creek Campground would be vulnerable to drifting and unexpected closures, increasing the possibility of snowed-in vehicles at the end of the road during severe storms. The frequency of this drifting should be monitored for the future possibility of closing the road beyond the dam.

If Alternative 7-M were unable to be fully implemented in any given year due to under funding, there would be fall back options:

1. One option might plow up to Langohr Campground for the full season, as contemplated in Alternative 4. If this were to be the case, the cost would be equal to Alternative 4.
2. A second option might be to plow up to Blackmore for half the season, or until the funds ran out. The cost of this option would vary proportionately with the cost of Alternative 7-M adjusted roughly by the percentage of the season plowed.
3. A third option might be a combination of options one and two.

## **Predicted Changes to the Transportation System – Phase 2**

Opening the transportation system would involve changes to roads and trails. For all users, new route construction would mean full construction to current standards. Existing trails may only require specific occasional work to make functional for new or changing designated uses. Route specific design and analysis would be accomplished before this work is done.

### **Passenger Car Roads**

In all alternatives, few physical changes are necessary to implement Phase 2. Travel Management postings would be installed. Gate locations may be removed, adjusted or added to implement changes to seasonal dates.

### **Backcountry Roads**

In all alternatives, few physical changes are necessary to implement Phase 2. Travel Management postings will be installed. Gate locations may be removed, adjusted or added to implement changes to seasonal dates.

### **Administrative Roads**

In all alternatives, few physical changes are necessary to implement Phase 2. Travel Management postings would be installed. Bypasses may be added to existing gates to accommodate designated uses such as stock or ATVs. Travel Management postings would be installed. Gate locations may be removed, adjusted or added to implement changes to seasonal dates.

### **User Roads**

In Alternative 1, user routes would largely remain open and under similar constraints as today. In Alternatives 2 through 7-M, some user routes would be closed, others would remain open and in similar condition as today, others would be improved to minimize resource impacts or enhance user needs. These decisions would be made on a case-by-case basis over time and would be monitored for vehicles staying on the designated route with no proliferation.

## **Project Roads**

In all alternatives, few physical changes would be necessary to implement Phase 2. Earthen berms, barriers or other closure methods may be added or strengthened to meet access objectives.

## **Motorized Summer Trails**

Motorized summer trails include all routes used by vehicles under 50 inches wide, such as ATVs and motorcycles. Implementing Alternative 1 would mean converting most trails outside the Wilderness into full multipurpose trails, where ATVs are the largest vehicle. This would mean almost a complete conversion of these trails to double-tracks 4-6 feet wide. The result would largely be the disappearance of single-track trails outside of the Wilderness. Alternatives 2 through 7-M assume a designation process where uses are mixed and matched on distinct routes to be meet other objectives like separation of non-compatible uses, protection of resources and preservation of setting and experience for a variety of users. Most designated ATV routes would receive some level of work in Phase 2. Travel Management postings would be installed.

## **Motorized Winter Trails**

Only minor physical changes to existing trails would be necessary to implement Phase 2. Opening new routes would require new route construction in some cases. Opening new routes on existing roads would require minimal changes, like route marking. Travel Management postings would be installed.

## **Non-Motorized Summer Trails**

Only minor physical changes to existing trails will be necessary to implement Phase 2. New routes require full standard construction, depending on the designated uses. Travel Management postings will be installed.

## **Non-Motorized Winter Trails**

Only minor physical changes to existing trails would be necessary to implement Phase 2. New routes would require full standard construction, including installation of route markings. Travel Management postings would be installed.

## **Phase 3 – Long-term changes to the transportation system**

This phase would continue over time to make improvements to the transportation system by adding durability, correcting deficiencies, replacing aging structures, implementing access objectives, further protecting adjacent resources like stream courses, enhancing user experiences, extending use seasons and managing changes in use volumes.

## Implementation Schedule – Phase 3

Implementation of Phase 3 would likely begin after the completion of the short-term changes needed in Phase 2. Phase 3 needs are active as long as the transportation system is in place. Table 3.11.7 identifies primarily the starting point of Phase 3 since the long-term needs are continuous into the future.

The pace of improvements is dictated in large part by the availability of improvement funds. These funds come primarily from direct appropriation from Congress or from land management activities that require transportation systems, like mining and timber harvest. Most of the road improvements made in the past have been the result of timber harvest activities and its need for a road system. Most of the trail improvements made in the past have been for fire protection access and recreational access. Improvements in the future would come from similar sources, but not necessarily in the same mix.

**Table 3.11.7 Implementation Schedule for Phase 3 – long-term changes.**

Implementation Action	Implementation Year															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	++
Roads																
All Alternatives																
Summer Motorized and Non-Motorized Trails																
Alternative 1																
Alternative 2																
Alternative 3																
Alternative 4																
Alternative 5																
Alternative 6																
Alternative 7																
Winter Trails																
All Alternatives																

## Implementation Cost – Phase 3

The cost to bring and keep a transportation system to full standard without flaws is substantial. Keeping roads and trails to standard is a long-term goal where priority setting is essential to keep the facilities at custodial levels. Most funding sources acknowledge providing less-than-adequate funding levels. Most sources are capable of only providing funding for basic custodial levels of care and improvement, much less to standard. Realistically, the Forest would require several million dollars per year, over time to invest into the transportation system in order to bring roads and trails to standards. Funding levels are typically based on the size of the system using per mile/per type unit costs. Twice the system means twice the funds; one half the system means one-half the funds. This funding scheme encourages the focus on an efficient and economical system.

## Predicted changes to Transportation System – Phase 3

The transportation system is intended to be adaptable to changing needs of the public. When changes in volume or pattern or type occur, the transportation system needs to adapt to preserve



function, safety and protection. The following discussion by user type attempts to characterize the likely changes, over-time, that the transportation system of roads and trails would undergo. These changes tend to be independent of the alternatives until demand exceeds supply, and the facilities, incapable of carrying that type or volume of use, distress rapidly.

Since the Travel Plan would make decisions only on the appropriate uses on routes, additional analysis and decision-making would be required to finalize specific road and trail standards. These standards will have to adapt over-time as use volumes and patterns change.

## **Passenger Car Roads**

Since passenger car roads are the backbone of the road system, the most changes would be expected to these roads.

Road classes would remain similar over time. Changes usually take place only when a major new development occurs.

Seasons of use may extend in the future when road durability is improved. Roads that are restricted seasonally only because of soft road conditions would likely be improved over time and the restrictions possibly lifted. This is particularly true where private access is required yearlong and plowing occurs. These roads would be improved under the Public Forest Service Road (PFSR) program. When Congress provides funding for this program, one can expect additional improvements to meet existing and near-term road demands. This would occur throughout the Forest on roads identified as potential PFSRs. These roads are currently being operated at a higher standard than the facility currently provides.

Expect changes in the number of lanes. As use volumes increase on a single-lane road, eventually double-lanes will be required to handle the volume. Single-lane roads with turnouts have limited volume capacities. Eventually, passing oncoming traffic becomes hazardous.

Expect changes in surface types. All native surfaces would eventually become surfaced with aggregate. Some key roads will be paved when the volume and type of traffic exceeds the carrying and maintenance capacity of aggregate. Pavement would likely be restricted to the PFSRs that provide the primary access to and within the Forest.

Expect improvements in stream crossings. Many stream crossings, particularly crossings with culverts, would require improvements to meet today's requirements.

## **Backcountry Roads**

Over time, backcountry roads would generally remain primitive recreational roads with seasonal restrictions. Most would retain native surfaces with spot surfacing with coarse aggregate to minimize sediment production. Few changes are expected.

## **Administrative Roads**

Few changes are expected. Some administrative roads would receive spot surfacing with course aggregate to minimize sediment production.

## **User Roads**

Expect a general decrease in these roads and an overall improvement to those that remain. For those that remain, expect overall shortening of the route, end barriers and signs installed to delineate traffic, and the possibility of course aggregate surfacing to be added on those adjacent to passenger car roads or near riparian zones. All the roads that aren't decommissioned will be put on the designated system of roads either as a short road or as a feature to main road, such as a dispersed camping site. Either way, all the remaining routes would be considered on the designated system of roads and would be a part of the Motor Vehicle Use Map.

## **Project Roads**

No changes to project roads are planned as part of this Travel Plan, unless the roads are designated to have recreation trail uses superimposed on them or mitigation has been identified.

## **Motorized Summer Trails**

The major changes to the motorized ATV system would happen in Phase 2. Phase 3 would continue to add durability to the trail system. It is very likely that, because of the general decrease in motorized opportunities throughout the Forest and the increase in popularity, that some popular ATV routes would likely see substantial increases in use. These routes may likely require additional improvements to increase durability, passing potential and resource protection. ATV routes would generally remain as opportunities at the novice and intermediate challenge levels.

Motorcycle routes without ATVs would likely change when other coincident uses, like stock or mountain bikes, require the similar improvements on the same route. These routes would generally remain as opportunities at the intermediate and advanced challenge levels. Novice opportunities would remain on the ATV routes.

It is not likely that seasons of use would be extended in the future. Due to the expense, trails are typically not surfaced to resist spring breakup. Springtime restrictions, while generally in place at the present time, will be expanded or modified in Alternatives 2 through 7-M to reflect more accurate springtime conditions. Most motorized trails will have springtime restrictions.

## **Motorized Winter Trails**

As use increases, additional grooming and widening on the most popular routes would be likely. Speed limits may be imposed. Additional warning signs are likely on these routes.

## **Non-Motorized Summer Trails**

Many of the summer trails are under-designed for their current use. The most common problem is gradients are too steep and erosion unacceptable.

Expect the number of Class 5 trails to increase in response to increasing accessibility needs. In the near term, these would be routes that have attractions within a couple of miles of the trailhead, have favorable geography and are outside Wilderness. Judging from the potential opportunities on the Forest, expect these trails to cap at 4% of the system, or around 100 miles.

Class 4 trails would likely decrease from 35% of the system today to 25%. Further analysis would likely demonstrate these routes are over-classified and would require only a Class 3 level to fulfill their functional needs, particularly as motorized ATV use is further restricted. The function of Class 4 trails is to provide the main access to the Forest or access to major destinations. Class 3, 2 and 1 trails would then disperse users to alternate destinations. Class 5 trail additions would also come from this group.

The number of Class 3 trails would likely increase from 45% of the system today to 55%. The increase would come from the reclassification of the Class 4 trails. This is the core of the summer system and should represent the majority core of the system.

It is not likely that seasons of use would be extended in the future. In order to minimize erosion and facility damage and minimize maintenance costs, restricting stock and bicycles (similar to motorized users) during spring breakup is important on trails with poor soils. Full length surfacing is cost prohibitive and aesthetically unpleasing on all but class 5 trails. Alternatives 2-6 will reduce the season of use slightly by adding springtime restrictions to stock and mountain bikes. Alternative 1 sets no springtime restrictions to stock and mountain bikes on any trails for spring breakup and snow melt. Alternative 7-M proposes to restrict 12 trails in the spring to either stock or mountain bikes. These routes have particularly poor soils, have been recently constructed, or will be constructed so need either long-term or short term protection. Repairs to trails might eliminate the need for springtime restrictions. Without restrictions, one might expect accelerated damage to trail treads and drainage structures. Tread damage occurs when vulnerable saturated soils in the spring are either stomped by stock hooves or rutted by mountain bike wheels. Add snowmelt and spring rain storms to this damaged tread and the result will be accelerated soil movement from the tread. Drainage structures, like waterbars, drain dips, and culverts are much more likely to plug with this added soil movement and cease to function. Maintenance would require an annual heavy cleaning rather than an annual light cleaning at an added cost of \$10 to \$20 per mile. Loss of soil on the tread typically exposes more rock, increases trenching, and breaks down the outer edge of the tread. Users tend to look for non-muddy high-ground causing trail braiding, especially in meadows. Additional maintenance necessary to correct this damage can cost between \$3500 and \$7500 per mile and may be required every 5 years in this country. This is a substantial contributor to the deteriorated state of the Forest trails today, particularly on trails with easy springtime road access. This has also been an added contributor to sediment delivery into stream channels where the trail is in close proximity.

## **Non-Motorized Winter Trails**

After Phase 2 is completed, long-term improvement of the non-motorized system would be to improve locations to adjust challenge, improve route marking and some tread widening on key routes intended for novice challenge.

## **Access Goals and Objectives**

In order to resolve access objectives, additional analysis and decision-making would be required on specific routes and facilities. As the Forest opts to resolve an access goal or is faced with an outside opportunity to resolve an access goal, actual route locations and design parameters would then be developed.

## **Cumulative Effects**

Refer to other resource sections.

Managing use restrictions on routes during vulnerable periods of time, like during spring breakup, protect the transportation investments and maximize the efficiency of maintenance work.

## **Effects of Proposed Goals, Objectives, Standards and Guidelines**

Proposed goals, objectives, standards and guidelines, if implemented, would likely affect the design, construction, and maintenance of the transportation system. Costs discussed in this section assume improvements will meet these requirements. Refer to other resource sections for applicable requirements.

## **Consistency with Laws, Regulations, Policy, and Federal, Regional, State and Local Land Use Plans (including the Forest Plan)**

Refer to other resource sections regarding whether the transportation system meets applicable requirements.

Implementation of Alternative 7-M will fully meet the requirements of the “Motor Vehicle Rule” (Travel Management; Designated Routes and Areas for Motor Vehicle Use - 36 CFR Parts 212, 251, 261, and 295) by:

- Designating roads, trails, and areas open to motor vehicle use by vehicle class and time of year (36 CFR 212.56).
- Identifying designated motorized roads, trails, and areas on a motor vehicle map (36 CFR 212.56).